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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/770,769	01/25/2001	Avishai Keren	14531.107.1.1	7768

47973 7590 07/15/2005

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EXAMINER	
SHANNON, MICHAEL R	
ART UNIT	**PAPER NUMBER**
2614	

DATE MAILED: 07/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/770,769	KEREN ET AL.	
	Examiner	Art Unit	
	Michael R. Shannon	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 April 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21,23,24,26-28 and 30-35* is/are pending in the application.

4a) Of the above claim(s) *1-16 and 33-35* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17-21, 23-24, 26-28, and 30-32* is/are rejected.

7)☒ Claim(s) *17,19,20,23,24,26,30 and 31* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *20050128, 20050414*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed April 14, 2005 have been fully considered but they are not persuasive.

The applicant has made arguments on pages 10-15 of the reply filed with the Office on April 14, 2005. The arguments relate to the elected Invention II (claims 17-32) as amended and focus, for the most part, on independent claims 17, **21 (should be 20)**, and 26. Each individual argument will be addressed below.

Also, the Examiner notes that throughout the arguments, the Applicant refers to independent claim 21, however, this seems to be a typographical error and it will be understood throughout the remainder of this Office Action, that the Applicant meant to set forth arguments regarding independent claim 20.

Regarding the argument set forth on the bottom of page 11, the Applicant states "For example, regarding claims 17 and **21**, the combination of Williams and Richardson does not disclose or suggest degrading a set of display commands in response to transmission bandwidth limitations and transmitting the degraded display commands as compressed video streams to various remote locations, as recited, inter alia, in claims 17 and **21**" (Emphasis Added by Examiner to point out apparent typographical error, 21 should be 20 as noted above). Later, on page 12, the Applicant states, "In particular, Richardson does not disclose or suggest degrading a set of display commands in response to transmission bandwidth limitations and transmitting the degraded display commands as compressed video streams to various remote locations." The Examiner

must respectfully disagree with the interpretation of the Richardson reference. The Richardson reference does point out, "Encodings actually used on a given connection can be negotiated according to the capabilities of the server and client and the connection between them." Different encoding techniques (as taught by the Richardson reference) are used for various video encoding schemes for rendering desktops and other applications generated at a server on a display of a client. This inherently teaches that a connection speed (connection capability) is analyzed and an encoding scheme is chosen based on the capability of the connection from server to client. This means that an encoding scheme that degrades the content of the video (as many encoding scheme's do, in order to save bandwidth, therefore making it more acceptable for a lower bandwidth connection) could be used based on the connection's capabilities. Also, the usage of the word "negotiated" by the Richardson reference implies that the encoding scheme, and therefore, the quality of the video could be negotiated (varied) according to the capability of the connection. For example, the Richardson reference talks about copy-rectangle encoding, which copy's portions of the video signal instead of using raw data signal, in order to conserve bandwidth. The copying of portions of the video signal degrades the signal from its original raw data and therefore conserves bandwidth when the image is transmitted to the client.

The Applicant further states, on page 13, "Richardson does not disclose or suggest degradation of display commands and the transmission of the degraded display commands as compressed video. Rather, Richardson—at most—discloses providing various encoding schemes for video streams of application data, not degrading display

commands and the transmission thereof as compressed video data." The Examiner, again, must respectfully disagree with this analysis of Richardson. As stated above, the Richardson reference does teach the degradation of display commands and the efficient transmission thereof in MPEG encoded moving images.

Finally, the Applicant argues, on the bottom of page 13, "For example, the combination of Williams and Richardson does not disclose or suggest a generator with a compressor for converting two sets of display commands into two simultaneous compressed video streams, wherein the generator trades off the compression of one set of display commands with the compression of a second set of display commands, as recited, inter alia, in claim 26." This does, at first, seem to be the case, however, if one were to consider the functionality of the typical microprocessor (as is surely present in the VNC Server of the Richardson reference) for accomplishing much of the encoding and processing, one will realize that the typical microprocessor is programmed to multitask. Multitasking is defined as "a form of processing supported by most current operating systems in which a computer works on multiple tasks—roughly, separate 'pieces' of work—seemingly at the same time by parceling out the processor's time among the different tasks." The common functionality of a microprocessor would lead one to understand that two sets of compression could be accomplished at once, using a multitasking processor. Therefore, even though the Richardson reference teaches a system that compresses and encodes a single piece of image data, it is commonly accepted that multiple compression and encoding processes could take place on a standard multitasking microprocessor. This "trading off" functionality can also be

referred to as "parceling" and the microprocessor parcels the processes so as to perform two processes at the same time. Furthermore, the suggestion for the Richardson reference to compress and encode multiple displays simultaneously can be found in the Williams reference, wherein Williams discloses that the "server maintains multiple, simultaneously active desktops, i.e., one desktop for each client" [col. 3, lines 34-36]. While each desktop may be maintained and rendered in a separate, dedicated frame buffer in the server PC, the server PC only contains one processor, and therefore, must use multitasking in order to accomplish multiple, simultaneous desktops.

Also, on page 14, the Applicant points out, "Richardson, however, is silent with respect to converting two sets of display commands into two simultaneous compressed video streams. As such, Richardson, cannot possibly disclose or suggest a trade off of the compression of one set of display commands with the compression of a second set of display commands during such simultaneous compression." As is discussed above, the Richardson reference does not expressly disclose the processing of two sets of display commands, however, it is commonly understood in the art that when two simultaneous processes are to occur, a standard multitasking processor can be used to accomplish just this task. Also, the motivation for multiple desktops can be found in Williams, as discussed above.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 17-21, 23-24, 26-28, and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Williams (US 6,202,211), cited by examiner, in view of Richardson et al (VNC), cited by examiner.

Regarding claim 17, the claimed remote computing server system is met as follows:

- The claimed server, executing a plurality of programs, each of which generates a set of display commands which represent a user interface for each of said plurality of programs is met by Williams, wherein he teaches a server, which maintains multiple active desktops and applications for display at remotely located STB/TV combinations [col. 3, lines 31-46].
- The claimed "degradation module for degrading the plurality of sets of display commands responsive to transmission bandwidth limitations" is not expressly disclosed by Williams, as discussed above. However, the Richardson reference does teach the degradation limitation. The Richardson reference teaches different encoding techniques, which are used for various video encoding schemes for rendering desktops and other applications generated at a server on a display of a client. This inherently teaches that a connection speed (connection capability) is analyzed and an encoding scheme is chosen based on the capability of the connection from server to client. This means that an encoding scheme that degrades the content of the video (as many encoding

scheme's do, in order to save bandwidth, therefore making it more acceptable for a lower bandwidth connection) could be used based on the connection's capabilities. Also, the usage of the word "negotiated" by the Richardson reference implies that the encoding scheme, and therefore, the quality of the video could be negotiated (varied) according to the capability of the connection. For example, the Richardson reference talks about copy-rectangle encoding, which copy's portions of the video signal instead of using raw data signal, in order to conserve bandwidth. The copying of portions of the video signal degrades the signal from its original raw data and therefore conserves bandwidth when the image is transmitted to the client. It would have been obvious to one of ordinary skill in the art at the time of the invention to degrade the plurality of sets of display commands responsive to the transmission bandwidth limitation, in order to save bandwidth and to send compressed encoded video streams faster than raw data streams.

- The claimed video compressor which receives the degraded plurality of sets of display commands and generates a compressed video stream from each one of the sets is not specifically disclosed in Williams, though the fact that the video information is multiplexed for delivery [col. 7, lines 13-19] would lead one to incorporate the compression teachings of the Richardson document. Richardson discloses Virtual Network Computing, which transmits compressed video images to a client. The compression is

discussed with regards to the MPEG standard [page 35, **A Single Graphics Primitive**] for compressing and encoding before transmission. It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a compressor to compress the video streams before transmission to the client, in order to allow for more efficient bandwidth usage, while, at the same time, complying with compression standards for transmission.

- The claimed "transmitter for the transmission of the plurality of compressed video streams to one or more remote locations" is not expressly disclosed in Williams, though the fact that the video information is multiplexed for delivery [col. 7, lines 13-19] would lead one to incorporate the compression teachings of the Richardson document. Richardson discloses Virtual Network Computing, which transmits compressed video images to a client. The compression is discussed with regards to the MPEG standard [page 35, **A Single Graphics Primitive**] for compressing and encoding before transmission. It would have been obvious to one of ordinary skill in the art at the time of the invention to transmit compressed video streams to the client, in order to allow for more efficient bandwidth usage, while, at the same time, complying with compression standards for transmission.

Regarding claim 18, the claimed mixing box that multiplexes the video streams onto a cable transmission network is met by Williams, wherein he discloses a cable bus topology with modulated signals by a modulator/mixer [col. 6, line 60 – col. 7, line 19].

Regarding claim 19, Williams does not specifically disclose the claimed mixing box that multiplexes the video streams onto a satellite transmission network. Williams does, however, disclose the aforementioned cable bus topology and cable transmission network. The examiner gives Official Notice that it is notoriously well known in the art to use satellite transmission networks in place of cable transmission networks, and submits that it would have been clearly obvious to one of ordinary skill in the art at the time of the invention to implement the Williams reference accordingly in order to utilize a satellite transmission network.

Regarding claim 20, the claimed method of video transmission is met as follows:

- The claimed step of executing, at a server computer, a plurality of programs, each of the programs generating a set of display responsive to an Internet connection, the set of display commands representing a user interface for the Internet connection is met by Williams, wherein he teaches a server, which maintains multiple active desktops and applications for display at remotely located STB/TV combinations [col. 3, lines 31-46]. Williams also teaches that the Internet or other communication network can be connected to the server for interaction therewith [col. 5, lines 38-45 and col. 6, lines 8-19].

- The claimed step of "degrading said set of display commands responsive to transmission bandwidth limitations" is not expressly disclosed by Williams, as discussed above. However, the Richardson reference does teach the degradation limitation. The Richardson reference teaches different encoding techniques, which are used for various video encoding schemes for rendering desktops and other applications generated at a server on a display of a client. This inherently teaches that a connection speed (connection capability) is analyzed and an encoding scheme is chosen based on the capability of the connection from server to client. This means that an encoding scheme that degrades the content of the video (as many encoding scheme's do, in order to save bandwidth, therefore making it more acceptable for a lower bandwidth connection) could be used based on the connection's capabilities. Also, the usage of the word "negotiated" by the Richardson reference implies that the encoding scheme, and therefore, the quality of the video could be negotiated (varied) according to the capability of the connection. For example, the Richardson reference talks about copy-rectangle encoding, which copy's portions of the video signal instead of using raw data signal, in order to conserve bandwidth. The copying of portions of the video signal degrades the signal from its original raw data and therefore conserves bandwidth when the image is transmitted to the client. It would have been obvious to one of ordinary skill in the art at the time of the

invention to degrade the plurality of sets of display commands responsive to the transmission bandwidth limitation, in order to save bandwidth and to send compressed encoded video streams faster than raw data streams.

- The claimed step of transmitting each of the degraded sets of display commands to a different remote location, wherein the degraded sets of display commands are transmitted as compressed video streams is not expressly disclosed in Williams, though the fact that the video information is multiplexed for delivery [col. 7, lines 13-19] would lead one to incorporate the compression teachings of the Richardson document. Richardson discloses Virtual Network Computing, which transmits compressed video images to a client. The compression is discussed with regards to the MPEG standard [page 35, **A Single Graphics Primitive**] for compressing and encoding before transmission. It would have been obvious to one of ordinary skill in the art at the time of the invention to transmit compressed video streams to the client, in order to allow for more efficient bandwidth usage, while, at the same time, complying with compression standards for transmission.

Regarding claim 21, the claimed programs being connected to a different Internet address is met by the discussion of the server maintaining one or more processes for each desktop being rendered at the server [col. 3, lines 60-62]. The Williams reference also discloses that the Internet or other communication network can be connected to the server for interaction therewith [col. 5, lines 38-45 and col. 6, lines 8-19]. The teachings

of the processes being executed (as is often done on normal desktop computers) at the server and the Internet connection lead one to realize a process/program which utilizes the Internet connection and can browse to different Internet addresses.

Regarding claim 23, the Williams and Richardson et al references disclose all of that which is discussed above with regards to claim 20. Williams does not disclose that the video streams are compressed responsive to known visual limitations at the remote location. Richardson, however, discloses a system that allows various encoding schemes in order to trade off parameters to compensate for client drawing speed (or visual limitations at the remote, client location) [page 35, **A Single Graphics Primitive** Section]. It would have been obvious to one of ordinary skill in the art at the time of the invention to compress the video streams responsive to known visual limitations, in order to allow the system to adjust to varying degrees of processing power and limitations on the server and client, in an attempt to make the system more universal.

Regarding claim 24, the Williams and Richardson et al references disclose all of that which is discussed above with regards to claim 20. Williams does not disclose that the video streams are compressed responsive to bandwidth limitations on the transmission. Richardson, however, discloses a system that allows various encoding schemes in order to trade off parameters to compensate for bandwidth limitations [page 35, **A Single Graphics Primitive** Section]. It would have been obvious to one of ordinary skill in the art at the time of the invention to compress the video streams responsive to bandwidth limitations, in order to allow the system to adjust to varying

degrees of processing power and limitations on the server, client, and transmission capabilities, in an attempt to make the system more universal.

Regarding claim 26, the claimed multi-headed display generator is met as follows:

- The claimed at least one CPU running at least one program, each of the programs generating at least one set of display commands, wherein the programs generate in totality at least two sets of content independent display commands is met by Williams, wherein he teaches that each user desktop (stored and executed at the server) is rendered and updated in its own, dedicated frame buffer before transmission of the video data (taken from the frame buffer) to the user STB/TV combination [col. 3, lines 40-46]. The CPU is diagrammed as item 31 in Figure 3.
- The claimed at least one compressor, which converts the two sets of display commands into two simultaneous compressed video streams is not met by the Williams reference, because it does not teach compression of the video data before transmission. The Richardson reference teaches compression using the MPEG protocol before the data is transmitted to the client [page 35, **A Single Graphics Primitive** Section]. It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a compressor to compress the video streams before transmission to the client, in order to allow for more efficient bandwidth usage, while, at the same time, complying with compression standards for transmission.

- The claimed "said generator trades off the compression of one set of display commands with the compression of a second set of display commands" is not expressly met by the Williams reference. However, as noted above, the functionality of the typical microprocessor (as is surely present in the VNC Server of the Richardson reference) accomplishes much of the encoding and processing. One will realize that the typical microprocessor is programmed to multitask. Multitasking is defined as "a form of processing supported by most current operating systems in which a computer works on multiple tasks—roughly, separate 'pieces' of work—seemingly at the same time by parceling out the processor's time among the different tasks." The common functionality of a microprocessor would lead one to understand that two sets of compression could be accomplished at once, using a multitasking processor. Therefore, even though the Richardson reference teaches a system that compresses and encodes a single piece of image data, it is commonly accepted that multiple compression and encoding processes could take place on a standard multitasking microprocessor. This "trading off" functionality can also be referred to as "parceling" and the microprocessor parcels the processes so as to perform two processes at the same time. Furthermore, the suggestion for the Richardson reference to compress and encode multiple displays simultaneously can be found in the Williams reference, wherein Williams discloses that the "server maintains multiple,

simultaneously active desktops, i.e., one desktop for each client" [col. 3, lines 34-36]. While each desktop may be maintained and rendered in a separate, dedicated frame buffer in the server PC, the server PC only contains one processor, and therefore, must use multitasking in order to accomplish multiple, simultaneous desktops. It would have been obvious to one of ordinary skill in the art at the time of the invention to include a multitasking system, in order to support processing and encoding of multiple streams of display commands at once, as is commonly done with multitasking processors.

- The claimed compression of the sets utilizing at least one shared resource of the generator is taught by the Williams reference. While the Williams reference does not teach the compression aspect (see the aforementioned MPEG protocol mentioned in the Richardson reference), it does teach that the video buffers and rendering take place using one CPU (the one shared resource for all of the desktops and applications to be rendered and transmitted) [col. 5, lines 15-27]. It would have been obvious to one of ordinary skill in the art at the time of the invention to transmit compressed video streams to the client, in order to allow for more efficient bandwidth usage, while, at the same time, complying with compression standards for transmission.

Regarding claim 27, the Williams and Richardson references teach all of that which is discussed above with regards to claim 26. The Williams reference further discloses that the shared resource is a CPU [col. 5, lines 15-27].

Regarding claim 28, the Williams and Richardson references teach all of that which is discussed above with regards to claim 26. The Williams reference further discloses that the shared resource is a memory resource [col. 5, lines 15-27].

Regarding claim 30, the Williams and Richardson references teach all of that which is discussed above with regards to claim 26. The Williams reference does not disclose that the trade off comprises trading off quality between the two command sets. The Richardson reference teaches trading off parameters (such as client drawing speed or quality based on encoding scheme) within the system, in order to accomplish multiple desktops (as taught by Williams) [page 35, **A Single Graphics Primitive** and **Adaptive Update** Sections]. It would have been obvious to one of ordinary skill in the art at the time of the invention to trade off quality between two command sets, in order to keep the system continually running and to transmit video data to users in an efficient and timely manner.

Regarding claim 31, the Williams and Richardson references teach all of that which is discussed above with regards to claim 26. The Williams reference does not disclose that the trade off comprises trading off frame rate between the two command sets. The Richardson reference teaches adaptive updating, or adapting the frame rate in order to account for faster or slower client system, in order to accomplish multiple desktop transmissions simultaneously (as taught by Williams) [page 35, **A Single**

Graphics Primitive and **Adaptive Update** Sections]. It would have been obvious to one of ordinary skill in the art at the time of the invention to trade off frame rate between two command sets, in order to keep the system continually running and to transmit video data to users in an efficient and timely manner.

Regarding claim 32, the Williams and Richardton references teach all of that which is discussed above with regards to claim 26. The Williams reference meets the claimed step of multiplexing the compressed video streams onto a single transmission bandwidth. The discussion of the video data being modulated and transmitted onto the video bus meets the claimed multiplexing capabilities [col. 7, lines 13-19]. Williams does not teach the fact that the video signals are compressed. The Richardson reference teaches that the video is compressed before transmission [page 35, **A Single Graphics Primitive** Section]. It would have been obvious to one of ordinary skill in the art at the time of the invention to transmit compressed video streams to the client, in order to allow for more efficient bandwidth usage, while, at the same time, complying with compression standards for transmission.

Claim Objections

4. Claims 17,19,20,23,24,26,30 and 31 are objected to because of the following informalities: The claimed are marked "(Amended)", which is not a proper claim listing to an amended claim. The claimed are understood to read "(Currently Amended)". Appropriate correction is required.

5. Claims 36-40 are objected to because the claims have already been cancelled in a preliminary amendment filed October 27, 2004. Therefore, the claims have not been

acknowledged and are assumed to have been labeled as "(Withdrawn)" by mistake. Claims 36-40 are thusly ignored. Appropriate correction is required.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael R. Shannon who can be reached at (571) 272-7356 or Michael.Shannon@uspto.gov. The examiner can normally be reached by phone Monday through Friday 8:00 AM – 5:00PM, with alternate Friday's off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Miller, can be reached at (571) 272-7353.

Any response to this action should be mailed to:

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to customer service whose telephone number is **(571) 272-2600**.

Michael R Shannon
Examiner
Art Unit 2614

Michael R Shannon
June 30, 2005

JOHN MILLER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600